



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/913,860   | 09/27/2001  | Masataka Masuda      | P07340US00/         | 5469             |
| 881  | 7590        | 01/25/2005           | EXAMINER            |                  |
| STITES & HARBISON PLLC<br>1199 NORTH FAIRFAX STREET<br>SUITE 900<br>ALEXANDRIA, VA 22314 |             |                      | NGUYEN, TAM M       |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 1764                |                  |

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/913,860

**Applicant(s)**

MASUDA ET AL.

**Examiner**

Tam M. Nguyen

**Art Unit**

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2004.  
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-12 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 10, 2004 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Logsdon et al. (4,876,402).

Logsdon discloses a method for making a composition by mixing a mixture containing a copper compound and a zinc compound with an aqueous solution of an alkali substance to prepare a precipitate which is then calcined and formed into a shaped form (e.g., table molding) of copper oxide-zinc oxide mixture. Nickel is then impregnated into the shaped form. The nickel impregnated mixture is then calcined to produce calcinated oxide and the calcined oxide is reduced with hydrogen. (See col. 3, lines 6 through col. 4, lines 58; col. 5, line 7 through col. 7, line 14)

Art Unit: 1764

Claim 1 is directed to a “manufacturing method” and the preamble phrase “a desulfurizing agent” is only a statement of ultimate intended utility. Therefore, the teaching of Logsdon is deemed to anticipate the limitation of claim 1.

Claim 2:

The calcined oxide contains about 1-4 wt. % of nickel. This is deemed to anticipate the limitation of claim 2. (See col. 7, lines 9-51)

Claim 3:

The calcined oxide is reduced at a temperature of from 150 to 300° C by utilizing a diluted hydrogen stream containing 1 to 5 percent hydrogen in a gas. It is noted that Logsdon does not specifically disclose that the diluted hydrogen gas has a hydrogen concentration of 6 vol. % or less. However, at STP conditions or room temperature conditions, the weight percentage of the hydrogen is similar to its volume percentage. Therefore, it would be expected that the diluted hydrogen stream would contain hydrogen of less than 6 vol. % as claimed. This is deemed to anticipate the limitation of claim 3. (See col. 4, lines 3-14)

Claim 4:

The method of making the catalyst is as discussed above.

Logsdon also discloses that the mixture of copper and zinc compounds can be prepared in the presence of aluminum compound (e.g., alumina). See col. 3, lines 49-56; col. 4, lines 59-68

Claim 4 is directed to a “manufacturing method” and the preamble phrase “a desulfurizing agent” is only a statement of ultimate intended utility. Therefore, the teaching of Logsdon is deemed to anticipate the limitation of claim 4.

Claim 5:

Art Unit: 1764

The calcined oxide contains about 1-4 wt. % of nickel. This is deemed to anticipate the limitation of claim 5. (See col. 7, lines 9-51)

Claim 6:

The calcined oxide is reduced at a temperature of from 150 to 300° C by utilizing a diluted hydrogen stream containing 1 to 5 percent hydrogen in a gas. It is noted that Logsdon does not specifically disclose that the diluted hydrogen gas has a hydrogen concentration of 6 vol. % or less. However, at STP conditions or room temperature conditions, the weight percentage of the hydrogen is similar to its volume percentage. Therefore, it would be expected that the diluted hydrogen stream would contain hydrogen of less than 6 vol. % as claimed. This is deemed to anticipate the limitation of claim 6. (See col. 4, lines 3-14)

Claims 7, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by JP-06-22870.

The JP patent discloses a desulfurization process by contacting a raw hydrocarbon feed with a catalyst comprising Cu, Zn, and Ni oxide, in the presence of hydrogen. (See paragraphs 0016-0029)

Claims 8 and 10:

The raw hydrocarbon is a town gas and the molar ratio of hydrogen to town gas is 0.36. (See paragraphs 25 and 41)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1764

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over reference as applied to claims 7 and 10 above, and further in view of EP-1192981.

The JP patent discloses that the desulfurization step is operated at a pressure of from 1 - 10 kg/cm<sup>2</sup> (1 - 10 atm) and at a temperature of from 280-380° C and wherein the raw hydrocarbon is town gas. (See paragraphs 0025, 0029, and 0030)

Claims 9 and 11:

Art Unit: 1764

The JP patent does not disclose that the desulfurization step is operated at a space velocity (GHSV) of 200 to 10,000 h<sup>-1</sup>. However, the EP patent discloses a hydrodesulfurization process wherein the process is operated at a space velocity (GHSV) of 200 - 4,000. (See page 4; lines 16-25). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the JP patent by operating the desulfurization step at a space velocity as taught by the EP patent because such space velocity is effective in a desulfurization process.

Claim 12:

The JP patent does not disclose that the desulfurization is formed so that the sulfur content in the town gas is not more than 6 ppb. However, the modified process of the JP patent is similar to the claimed process in terms of feedstock, operating conditions, and catalyst. Therefore, it would be expected that the modified desulfurization process of the JP patent would have the sulfur content in the town gas as claimed.

***Response to Remarks***

The argument that there is no motivation to combine the Logsdon reference with JP 6-22870 is not persuasive because of the new rejection above.

The argument that the applied references do not teach to achieve the solution of the problem of a large amount of heat generation is not persuasive because the JP process is essentially the same as the claimed process in terms of feedstock, operation conditions and catalyst. It is inherent that the process of JP would solve the problem of a large amount of heat generation as disclosed.

Art Unit: 1764

***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tam M. Nguyen  
Examiner  
Art Unit 1764

TN

  
1/20/05